| | Application No. | Applicant(s) | |
|---|---|---|---|
| **Notice of Allowability** | 10/076,961 | SURESH ET AL. | |
| | Examiner | Art Unit | |
| | Robert W. Morgan | 3626 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--*

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *1/11/07*.

2. ☒ The allowed claim(s) is/are *1, 3-5, 7-8 and 10-19*.

3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All     b) ☐ Some*     c) ☐ None    of the:

      1. ☐ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .

      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

    * Certified copies not received: _____ .

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application. **THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.

    (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached

      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____ .

    (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of
    Paper No./Mail Date _____ .

    **Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).**

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☒ Notice of References Cited (PTO-892)

2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)

3. ☒ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date *4/6/06*

4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material

5. ☐ Notice of Informal Patent Application

6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____ .

7. ☐ Examiner's Amendment/Comment

8. ☒ Examiner's Statement of Reasons for Allowance

9. ☐ Other _____ .

Robert Morgan
Patent Examiner
Art Unit 3626

## DETAILED ACTION

### *Response to Amendment*

1.      This communication is in response to the amendments filed 8/21/06 and 1/11/07. Claims

1, 3-5, 7-8 and 10-19 are presented for examination.

2.      The rejections under 35 USC 103(a) are withdrawn by the Examiner based on the

changes made by Applicants to the claims.

### *Allowable Subject Matter*

3.      Claims 1, 3-5, 7-8 and 10-19 are allowed.

The following is an examiner's statement of reasons for allowance: The primary reasons

for the allowance of claim 1 is the inclusion of the limitation in the claims, which is not found in

the prior art references, of a computerized method of identifying potentially fradulent healthcare

reimbursement claims by calculating a probability of sequences of healthcare states based on

probabilities of individual transition between healthcare states where the transition probability of

the sequence is the geometric mean of the transition probabilities between each state and next

state in the sequence.

The primary reasons for the allowance of claim 3 is the inclusion of the limitation in the

claims, which is not found in the prior art references, of is the inclusion of a method for

identifying potentially fraudulent or abusive treatment practices by healthcare providers where

sorting and identifying states is based on a state hierarchy process where each sequence has one

or more transitions, and the transition probability for each sequence of states is the geometric

mean of the transition probabilities between each state and the next state in the sequence.

The primary reasons for the allowance of claim 8 is the inclusion of the limitation in the claims, which is not found in the prior art references, of is the inclusion of a method for creating a model of healthcare states for each state transition from a first state to a next state and determining a transition probability of each sequence based on transition probabilities of transition between healthcare states using a look-up table and the geometric mean of the transition probabilities between each state and the next state in the sequence.

The primary reasons for the allowance of claim 15 is the inclusion of the limitation in the claims, which is not found in the prior art references, of is the inclusion of a system for creating models of healthcare claims using an entity profiling module to generate profiles for at least one entity where the transition probability of the sequence is the geometric mean of the transition probabilities between each state and the next state in the sequence.

4.      While the closest prior art (Hollway et al., U. S. Patent No. 5,253,164) teaches a method and system for detecting fraudulent medical claims including an expert computer system using a set of decision-making rules coupled to a knowledge base of facts and observations to assist the medical claims process (see: column 3, lines 30-32 and 51-54). (Pendleton, Jr. et al., U. S. Patent No. 6,253,186) teaches a method and apparatus for detecting potentially fraudulent suppliers or providers of goods or services including the steps of: a) collecting data on a plurality of suppliers and providers, including data relating to claims submitted for payment by the suppliers and providers; b) processing the data to produce a fraud indicator for at least one of the suppliers and providers; and c) determining, using the fraud indicator, whether the selected supplier or provider is a potentially fraudulent supplier or provider (see: column 1, lines 49-60). Pendleton, Jr. further teaches the use of a composite fraud indicator that is computed by

averaging a plurality of fraud indicators for the selected provider or supplier (see: column 2, lines 23-25). Pendleton, Jr. also teaches that other approaches include computing a weighted average of the individual fraud indicators, of selecting a subset of the indicators for use in computing the composite fraud indicator. After the composite fraud indicator is computed, it is compared to a threshold number, which is based upon prior experience (block 70) (see: column 7, lines 32-37). ("Maximum likelihood continuity mapping for fraud detection" to Hogden) teaches an analysis technique called maximum likelihood continuity mapping (MALCOM) for detecting fraud in medical insurance claims (see: abstract). Hogden further teaches a time-series analysis technique used to estimate the likelihood of a data sequences using training data composed of sequences of symbols such as medical procedure codes to create a model of sequence generation (see: page 2, paragraph 5). In addition, Hogden also teaches estimating probability of sequence symbols using a continuity map (see: page 4, paragraph 2). Additionally, Hogden teaches the use geometric mean to calculate the probability of symbol sequences using the continuity map (see: page 5, paragraph 2-8 and equation 1 and 2). Holloway et al., Pendleton, Jr. et al. and Hogden fail to teach a computerized method of identifying potentially fradulent healthcare reimbursement claims by calculating a probability of sequences of healthcare states based on probabilities of individual transition between healthcare states where the transition probability of the sequence is the geometric mean of the transition probabilities between each state and next state in the sequence.

Originally numbered claims 4-5, 7, 10-14 and 16-19 are dependent on originally numbered claims 1, 3, 8 and 15, respectively and therefore incorporate the allowable features of originally numbered claims 1, 3, 8 and 15 through dependency.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### Conclusion

5.    The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

In related art (Fraud in the health insurance industry) Welch et al. examines 95 instances of fraud occurrences in the health care sector.

In related art (WO 03/071388) Pathria et al. teaches a transaction-based behavioral profiling, whereby the entity to be profiled is represented by a stream of transaction, is required in a variety of data mining a predictive modeling application.
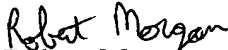
The prior art made of record and not relied upon is considered pertinent to Applicant's disclosure as background material and is not of particular significance. These prior art patents fail to teach or fairly suggest a computerized method of identifying potentially fradulent healthcare reimbursement claims by calculating a probability of sequences of healthcare states based on probabilities of individual transition between healthcare states where the transition probability of the sequence is the geometric mean of the transition probabilities between each state and next state in the sequence.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert W. Morgan whose telephone number is (571) 272-6773. The examiner can normally be reached on 8:30 a.m. - 5:00 p.m. Mon - Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Joseph Thomas can be reached on (571) 272-6776. The fax phone number for the

organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would

like assistance from a USPTO Customer Service Representative or access to the automated

information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Robert Morgan
Patent Examiner
Art Unit 3626